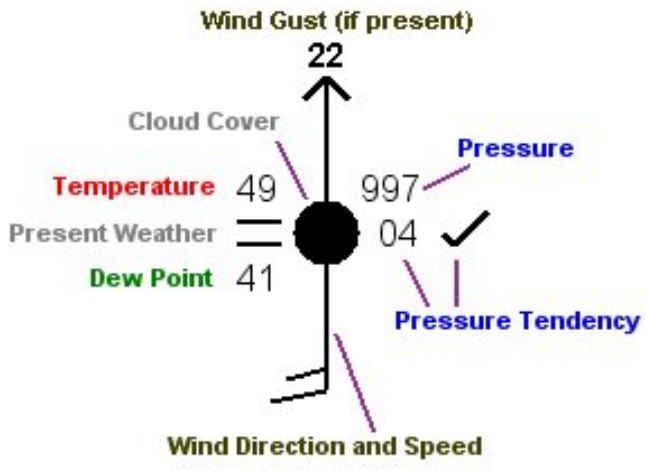
# How to Decode a Surface Observation Plot

Weather stations around the world report weather conditions at least once per hour using a format called METAR (a routine aviation weather observation). **METAR** stands for "**MET**eorological **A**erodrome **R**eport," which is the primary code used to report meteorological surface data. The data is collected by the NWS and distributed for viewing by the public. METARs are converted from a text format into a simple and readable format as shown on the right. This helps weather observers and meteorologists ascertain the current conditions at a quick glance.




**Temperature**: Air temperature (upper left corner of the METAR plot) and dew points (lower left) are converted from degrees Celsius ($^{o}$C) in the raw report to degrees Fahrenheit ($^{o}$F). On color maps, the air temperature is typically red and the dew point is green or brown depending upon the values.

**Pressure**: Mean sea level pressure (MSLP) is displayed in the upper right hand corner to the nearest tenth of a millibar (mb) with the first "9" or "10" truncated. If the first digit on the plot is high (for example; an "8"), then the truncated digit is a "9." If the first number is low (for example; an "1"), the pressure value will start with a "10". In the sample plot below, the displayed value (997) starts with a high number, therefore; the MSLP will be 999.7 mb. *MSLP may not be plotted on all maps.*

Pressure Tendency: Immediately below the MSLP plot is the pressure tendency for preceding three hours, displayed to the nearest tenth of a millibar. The symbol to the right indicates whether the pressure has risen, fallen, or remained steady during this time. In the example above, "04" represents a 4 mb change in pressure compared to the observation three hours ago. The symbol to the right indicates that the pressure fell briefly, before rising.

**Wind**: Wind barbs indicate the direction from which the winds are blowing from as well as the speed to the nearest five knots (1 knot is approximately 1.15 mph). If winds are light and variable, then the wind barb will be replaced with a circle around the cloud cover portion of the plot. If a wind gust was noted at the time of observation, it will be displayed on the opposite end of the plot with an arrow and a numerical value.

**Sky and Weather:** The amount of cloud cover will determine how much or little the circle is filled. Present weather conditions such as rain, snow, fog, and even thunder are reported to the left of the sky condition.